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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,747	02/22/2002	Shen Buswell	10001915-3	9361

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EXAMINER

DO, AN H

ART UNIT PAPER NUMBER

2853

DATE MAILED: 08/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/080,747	Applicant(s) BUSWELL ET AL.	
	Examiner An H. Do	Art Unit 2853	✕

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 February 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9,10,12,14-26 and 28-39 is/are rejected.
- 7) ☒ Claim(s) 8,11,13 and 27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Specification*

1. The abstract of the disclosure is objected to because the terms "comprises" in line 9 and "comprise" in line 10 should be changed to --includes-- and --include-- respectively. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 14-25 and 28-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Miller (US 6,132,034).

Miller discloses in Figures 1-5 a printhead (12) comprising a substrate (16) including the following claimed features:

- a plurality of fluid heating elements (30);
- at least one fluid channel (26) that delivers fluid to the plurality of fluid heating elements (30), wherein the at least one fluid channel (26) is defined by first and second substantially parallel side walls (44) and first and second non-parallel end walls (Figure 3);
- each of the first and second end walls is non-linear and curved by the arcs (column 4, lines 10-19, as shown in Figures 3 and 4 with the curve);

- the at least one fluid channel is a plurality of fluid channels (column 4, lines 5-9);
- a plurality of nozzles (42) through which the fluid droplets are ejected, with one nozzle (42) associated with one fluid heating element (30) of the plurality of fluid heating elements;
- a plurality of firing chambers (36) with one nozzle (42) of the plurality of nozzles and one fluid heating element (30) of the plurality of fluid heating elements associated with one firing chamber of the plurality of firing chambers;
- a plurality of fluid feed passageways (Figure 5, elements 32);
- a base layer (16), a barrier layer (34) defining the firing chambers (36) and fluid feed passageways (32), and an orifice plate (40) defining the nozzles (42); and
- the plurality of fluid channels (26) includes: a first fluid channel operatively associated with a first multiplicity of fluid heating elements of the plurality of fluid heating elements, the first fluid channel defined by a first slot extending through the substrate; a second fluid channel operatively associated with a second multiplicity of fluid heating elements of the plurality of fluid heating elements, the second fluid channel defined by a second slot extending through the substrate; and a third fluid channel operatively associated with a third multiplicity of fluid heating elements of the plurality of fluid heating elements, the third fluid channel defined by a third slot extending through the substrate (Column 6, lines 15-22).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 6, 7, 9, 10, 12 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (US 6,132,034) in view of Sugahara et al (US 5,363,133).

Miller discloses the claimed invention except for reciting the at least one fluid channel has a width dimension of at least 15  $\mu\text{m}$  and less than 300  $\mu\text{m}$ , and a length dimension of at least 5000  $\mu\text{m}$  or 8000  $\mu\text{m}$ .

Sugahara et al teaches in Figure 5 the ink channel (103) has a width dimension of 80  $\mu\text{m}$  (column 1, line 45), which is within the claimed range of between 15  $\mu\text{m}$  and less than 300  $\mu\text{m}$ , and a length dimension of 10 mm (10000  $\mu\text{m}$ ) (column 1, line 46), which exceeds the claimed minimum required length of at least 5000  $\mu\text{m}$  or 8000  $\mu\text{m}$ .

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Miller's ink channel with an ink channel having a width of within the range of 15  $\mu\text{m}$  and less than 300  $\mu\text{m}$  and a length of at least 5000  $\mu\text{m}$  or 8000  $\mu\text{m}$ , as taught by Sugahara et al, for the purpose of obtaining the appropriate ratio of the sectional area of the nozzle on the ink jetting side to that on the ink channel side so as to maintain the consistent jet speed.

***Allowable Subject Matter***

6. Claims 8, 11, 13 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 8, it is the inclusion of the limitation of the width dimension of the at least one fluid channel is 200  $\mu\text{m}$ . It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Regarding claim 11, it is the inclusion of the limitation of the length dimension of the at least one fluid channel is 8750  $\mu\text{m}$ . It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Regarding claims 13 and 27, it is the inclusion of the limitation of the width dimension is 200  $\mu\text{m}$  and the length dimension is 8750  $\mu\text{m}$ . It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yoshimura (US 5,971,528) discloses an inkjet head having ink

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channels including a length dimension of 90  $\mu\text{m}$ . Takahashi et al (US 5,402,159) discloses an inkjet head having ink channels comprising a width of 1.2 mm and a length of 15 mm.

**Contact Information**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 703-308-0525. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 703-308-4896. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



AD  
August 4, 2003



Benjamin R. Fuller  
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